

Radiation and Indoor Environments National Laboratory (R&IENL) operated the variable volume air sampler CF-903 at 15 standard cubic feet per minute (SCFM). The sampler is designed to pull in more air during heavy particulate conditions than the typical 2" low volume air sampler. The CF-903 air sampler is manufactured by HI-Q Environmental Products Company, Inc. The flow rate for the CF-903 is between 10-50 SCFM. The CF-903 air sampler is flow rate calibrated in the field. The D-870B calibrator, which is manufactured by F&J Specialty Products, Inc was used to air flow calibrate the CF-903.

The AFC-50 complete calibrator was used rather than the D-870B in areas where negative visibility existed. The AFC-50 complete has a lower SCFM range than the D-870B, thus making calibration practical in areas where filter saturation is greater. All three instruments were operated by R&IENL field personnel to Standard Operating Procedure CER-205 & CER-220, copies are included.

Air Sampling Procedure:

1. Using a Ludlum Model 19 survey the area where the air sampler will be located
2. Annotate the reading from the Ludlum Model 19 on the sample control form and field log book
3. Mount the CF-903 on a tripod at 1 meter
4. Utilize the Borosilicate Glass fiber filter paper 4" diameter DOP penetration < 3%
5. Using latex gloves remove the filter lock ring on the CF-903, using forceps, insert the 4" filter paper, rough fibrous side should face outward
6. Attach the D-870B or the AFC-50 complete calibrator to the CF-903.
7. Turn on the D-870B and AFC-50 complete. Verify that the display is defaulted to 0.00 SCFM before calibration. Wait 5 minutes for the electronics to warm up and stabilization to occur before turning on the CF-903.
8. Verify that the CFM is illuminated on the D-870B calibrator. Verify that the Flow control knob on the AFC-50 complete is switched to CFM and the top right switch is switched to standard temperature and pressure (STP).
9. Do to normal fluctuation the values on the D-870B and AFC-50 complete fluctuate. Over a period of 1 minute take the lowest and highest reading, and then average the value. Annotate the average value on the sample control form and on the field log book.
 - a. Annotate the sampling start and end time along with the air samplers latitude and longitude on the sample control form and the field log book
 - b. Annotate the environmental conditions on the sample control form and field log book
 - c. Annotate the type of the air sampler and calibrator used on the sample control form and field log book.
10. After the sampling period and while the sampler is still running, connect the D-870B or AFC-50 complete calibrator (make sure a 5 minute warm-up period is observed for stabilization) and annotate the average value in CFM
11. Turn off the CF-903 air sampler. Turn off and disconnect the D-870B or AFC-50 complete calibrator.
12. Annotate the stop time on the sample control form and field log book.

13. Using latex gloves and forceps remove the filter.
14. Using forceps insert the saturated filter into a glassine bag. Fold the top of glassine bag over, just enough not to crease the filter. Attach a security label to the folded flap. Insert the glassine bag into a clear zip lock bag. If necessary attach a security label over the zip lock. The zip lock bag containing the glassine bag is then inserted into another larger zip lock bag along with the completed sample control form.
15. If another sampling period is required follow the procedure from the beginning.